

# INDEX OF TECHNICAL AND SYMPOSIUM PAPERS

## VOLUME 84, PARTS I AND II

### TITLES

#### A

Analysis of Failure Patterns of 531 Residential Air-Conditioning Units, An, H. KARGER, C.L. CARPENTER ..... II 462

Analysis of the Pulse Combustion Burner, An, F. W. AHRENS, C. KIM, S.W., TAM ..... I 488

Application of Acceptable Temperature Drifts to Built Environments as a Mode of Energy Conservation, L.G. BERGLUND, R.R. GONZALEZ ..... I 110

Application of Aerial Infrared Thermography to the Measurement of Building Heat Loss, R. J. GOLDSTEIN ..... I 207

Application of ASHRAE Standard 93-77 to the Thermal Performance Testing of Air Solar Collectors, The, S.A. MUMMA, J.I., YELLOTT, B. WOOD ..... II 410

Assessment of Risk in the Research Laboratory: A Basis for Facility Design, D.L. WEST ..... I 547

Assessment of Thermal Comfort, R.F. GOLDMAN I 713

#### B

Balanced Duct Systems, H. BEHLS ..... I 624

Building Owner's View of Heating, Ventilating and Air-Conditioning Equipment Maintenance, The, R.F. CHAMPA ..... II 475

#### C

Collection and Characterization of Airborne Particulate Matter in Buildings, J.A. GIESEKE, E.R. BLOSSER, R.B. REIF ..... I 572

Comfort Air Conditioning and the Need for Refrigeration, D. ARNOLD ..... II 293

Comments on the Z-Transfer Function Method for Calculating Heat Transfer in Buildings, G.P. MITALAS ..... I 667

Comparison of Computer-Predicted Thermal Loads with Measured Data from Three Occupied Townhouses, W. ROBERTZ, R. ROGERS, D. NALL, D. GREENBERG ..... I 340

Computer-Aided Duct Design in a Small Engineering Office, E.B. MILLER, R.D. WEAVER I 647

Conserving Energy in Dual-Duct Systems by Reducing the Throttling Ranges of Air-Temperature Controllers, W.F. STOECKER, R.P. DABER ..... I 23

Control of Low Frequency Duct-Generated Noise in Building Air Distribution Systems, C.E. EB-BING, D. FRAGNITO, S. INGLIS ..... II 191

Controls for Heat Reclaim with Thermal Storage Coupled with Solar Heating, F.E. FILSON, JR. II 381

Controls for Residential Solar Heating, E.S. PELTZMAN ..... II 367

Correlation of Heat, Mass and Momentum Transport Coefficients for Plate-Fin-Tube Heat Transfer Surfaces with Staggered Tubes, F.C. McQUISTION ..... I 294

#### D

Design Criteria and Models for Preventing Combustion Oscillations, P.K. BAADE ..... I 449

Design Optimization of Air-Conditioning Systems, R. GLUCK, E. POLLAK ..... II 304

Development of a Hospital Energy Management Index, H.H. STROEH, J.E. WOODS ..... II 68

Diagnostic Test Determining the Thermal Response of a House, R.C. SONDEREGGER. I 691

#### E

Effect of Distribution Lines on Stand-By Loss of Service Water Heater, W.W. SCHULTZ, V.W. GOLDSCHMIDT ..... I 256

Effects of System Connections on Fan Performance, The, M.S. CLARKE, J.T. BARNHART, F.J. BUBSEY, E. NEITZEL ..... II 227

El Camino Real Solar Cooling Demonstration Project, The, E.F. SOWELL, K.E. SMITH, P.W. OTHMER ..... II 435

Empirical Approach to Thermal Comfort, The, F.H. ROHLES, JR. ..... I 725

Energy Recovery Performance in the Research Laboratory, R.C. MOYER ..... I 538

Energy Savings through Thermostat Setback, L.W. NELSON, J.W. MacARTHUR ..... II 319

Energy Savings through Thermostat Setback with Residential Heat Pumps, C.E. BULLOCK ..... II 352



Enthalpy-Concentration Diagram of the System R22-Dimethyl Formamide and Performance Characteristics of Refrigeration Cycle Operating with this System, M. JELINEK, I. BORDE, I. YARON	II	60	<b>L</b>  Laboratory Fume Hoods: Part I—A Performance Test, K.J. CAPLAN, G. W. KNUTSON ..... I 511 Laboratory Fume Hoods: Part 2—Influence of Room Air Supply, K.J. CAPLAN, G.W. KNUTSON ..... I 522
Equipment Life and Maintenance Cost Survey, M.T. AKALIN	II	94	
Estimation of Air Temperature Extremes, J.H. EMANUEL, J.L. HULSEY	II	285	
Evaluation of Fuel Oil Additives for Increasing Efficiency and Reducing Emissions of Boilers, R.D. GIAMMAR, A.E. WELLER, H.H. KRAUSE	I	367	
Experimental Studies of Mechanical Venting for Smoke Control in Tall Office Buildings, G.T. TAMURA, C.Y. SHAW	I	54	
Experimental Studies on Exterior Wall Venting for Smoke Control in Tall Office Buildings, G.T. TAMURA	II	204	
Experimental Study of Equivalent Thermal Properties of a Wall Section with Air Cavities, An, C.O. PEDERSEN, G.H. YOUNKER	I	703	
Feasibility of an Energy Index for Office Buildings, L.G. SPIELVOGEL, J.A. ORLANDO, P. HAYES	I	310	
Flow Losses in Rectangular Ducts Lined with Fiber Glass, W.B. SWIM	II	216	
Future Fuel Supplies for Industry: Bases for Choice, R.H. ESSENHIGH	I	80	
Future Research Needs Concerning the Human Response to Indoor Environments, P.O. FANGER	I	760	<b>M</b>  Mathematical Models for Predicting the Thermal Comfort Response of Building Occupants, L.G. BERGLUND ..... I 735 Measurement of Soiling of Surfaces in Rooms, J.W. WHITLOW, G.W. PENNEY ..... I 600 Measurement of the Specific Heat of Building Materials, R.P. TYE, S.C. SPINNEY ..... I 675 Method for Estimating the Seasonal Performance of Residential Gas and Oil-Fired Heating Systems, A. J. CHI, G.E. KELLY ..... I 405
Gas Furnace Size Requirements for Residential Heating Using Thermostat Night Setback, K. KOENIG	II	335	
Graphical Approach to the Efficiency of Flat-Plate Collectors, A. M. K. SELCUK	II	395	
Heat, Mass and Momentum Transfer Data for Five Plate-Fin-Tube Heat Transfer Surfaces, F.C. MCQUISTON	I	266	
Heat Transfer, Pressure Drop, Visual Observation, Test Data for Ammonia Evaporating Inside Pipes, M.M. SHAH	II	38	
Infrared Technique for Estimating Building Heat Loss, An, D.M. BURCH, T.KUSUDA	I	227	
Insurance and Air-Conditioning Equipment, G. SELLMAN	II	453	
Investigation of Heat Pump Performance in the Northern Climate through Field Monitoring and Computer Simulation, G.C. GROFF, W.R. REEDY	I	767	
New Air Conditioning, Refrigeration and Heat Pump Cycle, A., T.C. EDWARDS	II	150	
New Air-Source Heat Pump System without Defrosting Operation in Practical Use, T. MATSUDA, S. MIYAMOTO, Y. MINOSHIMA	II	127	
New Filter Media Flow Resistance Tester, A. M. HOLLINGSWORTH, JR.	I	590	
Note on Response Factors and Conduction Transfer Functions, A. B.A. PEAVY	I	688	
Occupant Acceptability of Eight-Hour-Long Temperature Ramps in the Summer at Low and High Humidities, L.G. BERGLUND, R.R. GONZALEZ	II	278	
Overview of Clothing as it Relates to the Physiology of Human Comfort, An, D.M. MUNSON, R.B. HAYTER	I	719	
Parametric Study of an Open Air Cycle Air Conditioner Using Moist Air Thermodynamics, A. K.W. COOPER, L.E. SUMNER, JR	II	136	
Performance of Vacuum Tube Solar Collector Systems, G. ENGHOLM, J. HERZ	II	419	
Practical Approach to Computer-Aided Duct Design, A. F. FERREIRA	I	617	
Preferred Air Speeds for Comfort in Warm Conditions, D.A. MCINTYRE	II	264	
Report on the ASHRAE Standard 52-68 Evaluation Test Program, A. C.J., BAUDER	I	561	

Residential Central Heating System Humidifier Computer Simulation and Application Guidelines, C.E. BULLOCK .....	I	799
Retrofitting an Existing Wood-Frame Residence to Reduce its Heating and Cooling Energy Requirements, D.M. BURCH, C.M. HUNT .....	I	176
Review of the Attenuation of Sound in Straight Lined and Unlined Ductwork of Rectangular Cross Section, A. I.L. VER .....	I	122

### S

Saving Energy by Night Setback of a Residential Heat Pump System, G.R. SCHADE .....	I	786
Self-Excited (Thermal) Oscillations—Some Experiments Related to the Rijke Tube Phenomena, J.M. CARSON, V.W. GOLDSCHMIDT, R.G. LEONARD .....	II	185
Short Method to Determine Seasonal Efficiency of Fossil-Fired Heating Systems for Labeling Purposes, A. U. BONNE, J.P. LANGMEAD .....	I	422
Solar Controls and Control Modifications: New Century Town Solar Homes, Vernon Hills, IL, L. R. SMELTZER .....	II	373
Stability of an Air-Temperature Control Loop, W.F. STOECKER, L.A. ROSARIO, M.E. HEIDENREICH, T.R. PHELAN .....	I	35

### T

Tabular Data Boundary-State Analysis of the Edwards Cycle, A. A.L. ECKER, T.C. EDWARDS, K. WARK, JR. ....	II	173
Technique for Protecting Retrofitted Wood-Frame Walls from Condensation Damage, A. D.M. BURCH, S.J. TREADO .....	I	197
Testing of Houses for Air Leakage Using a Pressure Method, J. KRONVALL .....	I	72
Testing of Solar Collectors According to ASHRAE Standard 93-77, J.E. HILL, J.P. JENKINS, D.E. JONES .....	II	107
Thermal and Non-Thermal Human Responses to Air Movement and Relative Humidity, J.E. WOODS .....	I	750
Thermal Comfort and Energy Consumption in Winter Conditions—A New Experimental Approach, J. HANNAY, L. LARET, J. LEBRUN, D. MARRET, P. NUSGENS .....	I	150
Thermal Stratification in Factories—Cooling Loads and Temperature Profiles, R.A. BEIER, R.L. GORTON .....	I	325
Three Approaches to Thermal Comfort, D.A. MCINTYRE .....	I	101
Transfer Function of Gas Flames: Methods of Measurement and Representative Data, V.W. GOLDSCHMIDT, R.G. LEONARD, P.K. BAADE, J.F. RILEY, G. WOLFBRANDT .....	I	466
Transmission of Combustion Roar from Burners and Furnaces, A.A. PUTNAM .....	I	477
Transpiration Rates of Certain Fruits and Vegetables, S.K. SASTRY, C. D. BAIRD, D.E. BUFFINGTON .....	I	237

### U

Unidirectional Coil Loop Thermosiphon Heat Exchanger, The, T.W. McDONALD, A.F.M. ALI, S. SAMPATH .....	II	27
Use and Limitations of ASHRAE Solar Algorithms in Solar Energy Utilization Studies, The, E.F. SOWELL .....	II	77
Using Controls to Reduce Component Size and Energy Needs for Solar HVAC, A.B. NEWTON ..	II	387

### W

Wood Stove Testing Methods and Some Preliminary Experimental Results, J. W. SHELTON, T. BLACK, M. CHAFFEE, M. SCHWARTZ .....	I	388
--	---	-----

## AUTHORS

### A

AHRENS, F.W., C. KIM, S.W. TAM, An Analysis of the Pulse Combustion Burner .....	I	488
AKALIN, M.T., Equipment Life and Maintenance Cost Survey .....	II	94
ALI, A.F.M., T.W. McDONALD, S. SAMPATH, The Unidirectional Coil Loop Thermosiphon Heat Exchanger .....	II	27
ARNOLD, D., Comfort Air Conditioning and the Need for Refrigeration .....	II	293

### B

BAADE, P.K., Design Criteria and Models for Preventing Combustion Oscillations .....	I	449
BAADE, P.K., V.W., GOLDSCHMIDT, R.G. LEONARD, J.F. RILEY, G. WOLFBRANDT, Transfer Function of Gas Flames: Methods of Measurement and Representative Data .....	I	466
BAIRD, C.D., S.K. SASTRY, D.E. BUFFINGTON, Transpiration Rates of Certain Fruits and Vegetables .....	I	237
BARNHART, J.T., M.S. CLARKE, F.J. BUBSEY, E. NEITZEL, The Effects of System Connections on Fan Performance .....	II	227
BAUDER, C.J., A Report on the ASHRAE Standard 52-68 Evaluation Test Program .....	I	561
BEHLS, H., Balanced Duct Systems .....	I	624
BEIER, R.A., R.L. GORTON, Thermal Stratification in Factories—Cooling Loads and Temperature Profiles .....	I	325

BERGLUND, L.G., Mathematical Models for Predicting the Thermal Comfort Response of Building Occupants .....	I	735
BERGLUND, L.G., R.R. GONZALEZ, Application of Acceptable Temperature Drifts to Built Environments as a Mode of Energy Conservation .....	I	110
BERGLUND, L.G., R.R. GONZALEZ, Occupant Acceptability of Eight-Hour-Long Temperature Ramps in the Summer at Low and High Humidities .....	II	278
BLACK, T., J.W. SHELTON, M. CHAFFEE, M. SCHWARTZ, Wood Stove Testing Methods and Some Preliminary Experimental Results .....	I	388
BLOSSER, E.R., J.A. GIESEKE, R.B. REIF, Collection and Characterization of Airborne Particulate Matter in Buildings.....	I	527
BONNE, U., J.P. LANGMEAD, A Short Method to Determine Seasonal Efficiency of Fossil-Fired Heating Systems for Labeling Purposes .....	I	422
BORDE, I., M. JELINEK, I. YARON, Enthalpy-Concentration Diagram of the System R22-Dimethyl Formamide and Performance Characteristics of Refrigeration Cycle Operating with this System .....	II	60
BUBSEY, F.J., M.S. CLARKE, J.T. BARNHART, E. NEITZEL, The Effects of System Connections on Fan Performance .....	II	227
BUFFINGTON, D.E., S.K. SASTRY, C.D. BAIRD, Transpiration Rates of Certain Fruits and Vegetables.....	I	237
BULLOCK, C.E., Energy Savings through Thermostat Setback with Residential Heat Pumps .....	II	352
BULLOCK, C.E., Residential Central Heating System Humidifier Computer Simulation and Application Guidelines.....	I	799
BURCH, D.M., C.M. HUNT, Retrofitting an Existing Wood-Frame Residence to Reduce its Heating and Cooling Energy Requirements....	I	176
BURCH, D.M., S.J. TREADO, A Technique for Protecting Retrofitted Wood-Frame Walls from Condensation Damage.....	I	197
BURCH, D.M., T. KUSUDA, An Infrared Technique for Estimating Building Heat Loss ..	I	227
<b>C</b>		
CAPLAN, K.J., G.W. KNUTSON, Laboratory Fume Hoods: Part I—A Performance Test .....	I	511
CAPLAN, K.J., G.W. KNUTSON, Laboratory Fume Hoods: Part 2—Influence of Room Air Supply .....	I	522
CARPENTER, C.L., H. KARGER, An Analysis of Failure Patterns of 531 Residential Air-Conditioning Units .....	II	462
CARSON, J.M., V.W. GOLDSCHMIDT, R.G. LEONARD, Self-Excited (Thermal) Oscillations—Some Experiments Related to the Rijke Tube Phenomena .....	II	185
CHAFFEE, M., J.W. SHELTON, T. BLACK, M. SCHWARTZ, Wood Stove Testing Methods and Some Preliminary Experimental Results .....	I	388
CHAMPA, R.F., The Building Owner's View of Heating, Ventilating, and Air-Conditioning Equipment Maintenance .....	II	475
CHI, J., G.E. KELLY, A Method for Estimating the Seasonal Performance of Residential Gas and Oil-Fired Heating Systems.....	I	405
CLARKE, M.S., J.T. BARNHART, F.J. BUBSEY, E. NEITZEL, The Effects of System Connections on Fan Performance .....	II	227
COOPER, K.W., L.E. SUMNER, JR., A Parametric Study of an Open Air Cycle Air Conditioner Using Moist Air Thermodynamics .....	II	136
<b>D</b>		
DABER, R.P., W.F. STOECKER, Conserving Energy in Dual-Duct Systems by Reducing the Throttling Ranges of Air-Temperature Controllers .....	I	23
<b>E</b>		
EBBING, C.E., D. FRAGNITO, S. INGLIS, Control of Low Frequency Duct-Generated Noise in Building Air Distribution Systems.....	II	191
ECKER, A.L., T.C. EDWARDS, K. WARK, JR., A Tabular Data Boundary-State Analysis of the Edwards Cycle.....	II	173
EDWARDS, T.C., A New Air Conditioning, Refrigeration and Heating Pump Cycle .....	II	150
EDWARDS, T.C., K. WARK, JR., A.L. ECKER, A Tabular Data Boundary-State Analysis of the Edwards Cycle.....	II	173
EMANUEL, J.H., J.L. HULSEY, Estimation of Air Temperature Extremes .....	II	285
ENGHOLM, G., J. HERZ, Performance of Vacuum Tube Solar Collector Systems .....	II	419
ESSENHIGH, R.H., Future Fuel Supplies for Industry: Bases for Choice.....	I	80
<b>F</b>		
FANGER, P.O., Future Research Needs Concerning the Human Response to Indoor Environments .....	I	760
FERREIRA, F., A Practical Approach to Computer-Aided Duct Design .....	I	617
FILSON, F.E. JR., Controls for Heat Reclaim with Thermal Storage Coupled with Solar Heating ..	II	381
FRAGNITO, D., C.E. EBBING, S. INGLIS, Control of Low Frequency Duct-Generated Noise in Building Air Distribution Systems.....	II	191
<b>G</b>		
GIAMMAR, R.D., A.E. WELLER, H.H. KRAUSE, Evaluation of Fuel Oil Additives for Increasing Efficiency and Reducing Emissions of Boilers..	I	367
GIESEKE, J.A., E.R. BLOSSER, R.B. REIF, Collection and Characterization of Airborne Particulate Matter in Buildings.....	I	572

GLUCK, R., E. POLLAK, Design Optimization of Air-Conditioning Systems.....	II	304
GOLDMAN, R.F., Assessment of Thermal Comfort .....	I	713
GOLDSCHMIDT, V.W., J.M. CARSON, R.G. LEONARD, Self-Excited (Thermal) Oscillations—Some Experiments Related to the Rijke Tube Phenomena .....	II	185
GOLDSCHMIDT, V.W., R.G. LEONARD, P.K. BAADE, J.F. RILEY, G. WOLFBRANDT, Transfer Function of Gas Flames: Methods of Measurement and Representative Data .....	I	466
GOLDSCHMIDT, V.W., W.W. SCHULTZ, Effect of Distribution Lines on Stand-By Loss of Service Water Heater .....	I	256
GOLDSTEIN, R.J., Application of Aerial Infrared Thermography to the Measurement of Building Heat Loss .....	I	207
GONZALEZ, R.R., L.G. BERGLUND, Application of Acceptable Temperature Drifts to Built Environments as a Mode of Energy Conservation .....	I	110
GONZALEZ, R.R., L.G. BERGLUND, Occupant Acceptability of Eight-Hour-Long Temperature Ramps in the Summer at Low and High Humidities .....	II	278
GORTON, R.L., R.A. BEIER, Thermal Stratification in Factories—Cooling Loads and Temperature Profiles .....	I	325
GREENBERG, D., W. ROBERTZ, R. ROGERS, D. NALL, Comparison of Computer-Predicted Thermal Loads with Measured Data from Three Occupied Townhouses .....	I	340
GROFF, G.C., W.R. REEDY, Investigation of Heat Pump Performance in the Northern Climate through Field Monitoring and Computer Simulation .....	I	767
<b>H</b>		
HANNAY, J., L. LARET, J. LEBRUN, D. MARRET, P. NUSGENS, Thermal Comfort and Energy Consumption in Winter Conditions—A New Experimental Approach .....	I	150
HAYES, P., L.G. SPIELVOGEL, J.A. ORLANDO, Feasibility of an Energy Index for Office Buildings .....	I	310
HAYTER, R.B., D.M. MUNSON, An Overview of Clothing as it Relates to the Physiology of Human Comfort .....	I	719
HEIDENREICH, M.E., W.F. STOECKER, L.A. ROSARIO, T.R. PHELAN, Stability of an Air-Temperature Control Loop .....	I	35
HERZ, J., G. ENGHOLM, Performance of Vacuum Tube Solar Collector Systems .....	II	419
HILL, J.E., J.P. JENKINS, D.E. JONES, Testing of Solar Collectors According to ASHRAE Standard 93-77 .....	II	107
HOLLINGSWORTH, M., JR., A New Filter Media Flow Resistance Tester .....	I	590
HULSEY, J.L., J.H. EMANUEL, Estimation of Air Temperature Extremes .....	II	285
HUNT, C.M., D.M. BURCH, Retrofitting and Existing Wood-Frame Residence to Reduce its Heating and Cooling Energy Requirements .....	I	176
<b>I</b>		
INGLIS, S., C.E. EBBING, D. FRAGINTO, Control of Low Frequency Duct-Generated Noise in Building Air Distribution Systems .....	II	191
<b>J</b>		
JELINEK, M., I. BORDE, I. YARON, Enthalpy-Concentration Diagram of the System R22-Dimethyl Formamide and Performance Characteristics of Refrigeration Cycle Operating with this System .....	II	60
JENKINS, J.P., J.E. HILL, D.E. JONES, Testing of Solar Collectors According to ASHRAE Standard 93-77 .....	II	107
JONES, D.E., J.E. HILL, J.P. JENKINS, Testing of Solar Collectors According to ASHRAE Standard 93-77 .....	II	107
<b>K</b>		
KARGER, H., C.L. CARPENTER, An Analysis of Failure Patterns of 531 Residential Air-Conditioning Units .....	II	462
KELLY, G.E., J. CHI, A Method for Estimating the Seasonal Performance of Residential Gas and Oil-Fired Heating Systems .....	II	405
KIM, C., F.W. AHRENS, S.W. TAM, An Analysis of the Pulse Combustion Burner .....	I	488
KNUTSON, G.W., K.J. CAPLAN, Laboratory Fume Hoods: Part 1—A Performance Test .....	I	511
KNUTSON, G.W., K.J. CAPLAN, Laboratory Fume Hoods: Part 2—Influence of Room Air Supply .....	I	522
KOENIG, K., Gas Furnace Size Requirements for Residential Heating Using Thermostat Night Setback .....	II	335
KRAUSE, H.H., R.D. GIAMMAR, A.E. WELLER, Evaluation of Fuel Oil Additives for Increasing Efficiency and Reducing Emissions of Boilers .....	I	367
KRONVALL, J., Testing of Houses for Air Leakage Using a Pressure Method .....	I	72
KUSUDA, T., D.M. BURCH, An Infrared Technique for Estimating Building Heat Loss .....	I	227
<b>L</b>		
LANGMEAD, J.P., U. BONNE, A Short Method to Determine Seasonal Efficiency of Fossil-Fired Heating Systems for Labeling Purposes .....	I	422
LARET, L., J. HANNAY, J. LEBRUN, D. MARRET, P. NUSGENS, Thermal Comfort and Energy Consumption in Winter Conditions—A New Experimental Approach .....	I	150
LEBRUN, J., J. HANNAY, L. LARET, D. MARRET, P. NUSGENS, Thermal Comfort and Energy Consumption in Winter Conditions—A New Experimental Approach .....	I	150
LEONARD, R.G., J.M. CARSON, V.W. GOLDSCHMIDT, Self-Excited (Thermal) Oscillations—Some Experiments Related to the Rijke Tube Phenomena .....	II	185

LEONARD, R.G., V.W. GOLDSCHMIDT, P.K. BAADE, J.F. RILEY, G. WOLFBRANDT, Transfer Function of Gas Flames: Methods of Measurement and Representative Data .....	I	466
<b>M</b>		
MacARTHUR, J.W., L.W. NELSON, Energy Savings through Thermostat Setback .....	II	319
MARRET, D., J. HANNAY, L. LARET, J. LEBRUN, P. NUSGENS, Thermal Comfort and Energy Consumption in Winter Conditions—A New Experimental Approach .....	I	150
MATSUDA, T., S. MIYAMOTO, Y. MINOSHIMA, New Air-Source Heat Pump System without Defrosting Operation in Practical Use .....	II	127
McDONALD, T.W., A.F.M. ALI, S. SAMPATH, The Unidirectional Coil Loop Thermosiphon Heat Exchanger .....	II	27
McINTYRE, D.A., Preferred Air Speeds for Comfort in Warm Conditions .....	II	264
McINTYRE, D.A., Three Approaches to Thermal Comfort .....	I	101
McQUISTON, F.C., Correlation of Heat, Mass and Momentum Transport Coefficients for Plate-Fin-Tube Heat Transfer Surfaces with Staggered Tubes .....	I	294
McQUISTON, F.C., Heat, Mass and Momentum Transfer Data for Five Plate-Fin-Tube Heat Transfer Surfaces .....	I	266
MILLER, E.B., R.D. WEAVER, Computer-Aided Duct Design in a Small Engineering Office .....	I	647
MINOSHIMA, Y., T. MATSUDA, S. MIYAMOTO, New Air-Source Heat Pump System without Defrosting Operation in Practical Use .....	II	127
MITALAS, G.P., Comments on the Z-Transfer Function Method for Calculating Heat Transfer in Buildings .....	I	667
MIYAMOTO, S., T. MINOSHIMA, T. MATSUDA, New Air-Source Heat Pump System without Defrosting Operation in Practical Use .....	II	127
MOYER, R.C., Energy Recovery Performance in the Research Laboratory .....	I	538
MUMMA, S.A., J.I. YELLOTT, B. WOOD, The Application of ASHRAE Standard 93-77 to the Thermal Performance Testing of Air Solar Collectors .....	II	410
MUNSON, D.M., R.B. HAYTER, An Overview of Clothing as it Relates to the Physiology of Human Comfort .....	I	719
<b>N</b>		
NALL, D., W. ROBERTZ, R. ROGERS, D. GREENBERG, Comparison of Computer- Predicted Thermal Loads with Measured Data from Three Occupied Townhouses .....	I	340
NEITZEL, E., M.S. CLARKE, J.T. BARNHART, F.J. BUBSEY, The Effects of System Connections on Fan Performance .....	II	227
NELSON, L.W., J.W. MacARTHUR, Energy Savings through Thermostat Setback .....	II	319
NEWTON, A.B., Using Controls to Reduce Component Size and Energy Needs for Solar HVAC .....	II	387
NUSGENS, P., J. HANNAY, L. LARET, J. LEBRUN, D. MARRET, Thermal Comfort and Energy Consumption in Winter Conditions—A New Experimental Approach .....	I	150
<b>O</b>		
ORLANDO, J.A., L.G. SPIELVOGEL, P. HAYES, Feasibility of an Energy Index for Office Buildings .....	I	310
OTHMER, P.W., E.F. SOWELL, K.E. SMITH, The El Camino Real Solar Cooling Demonstration Project .....	II	435
<b>P</b>		
PEAVY, B.A., A Note on Response Factors and Conduction Transfer Functions .....	I	688
PEDERSEN, C.O., G.H. YOUNKER, An Ex- perimental Study of Equivalent Thermal Properties of a Wall Section with Air Cavities ..	I	703
PELTZMAN, E.S., Controls for Residential Solar Heating .....	II	367
PENNEY, G.W., J.W. WHITLOW, Measurement of Soiling of Surfaces in Rooms .....	I	600
PHELAN, T.R., W.F. STOECKER, L.A. ROSARIO, M.E. HEIDENREICH, Stability of an Air- Temperature Control Loop .....	I	35
POLLAK, E., R. GLUCK, Design Optimization of Air-Conditioning Systems .....	II	304
PUTNAM, A.A., Transmission of Combustion Roar from Burners and Furnaces .....	II	477
<b>R</b>		
REEDY, W.R., G.C. GROFF, Investigation of Heat Pump Performance in the Northern Climate through Field Monitoring and Computer Simulation .....	I	767
REIF, R.B., J.A. GIESEKE, E.R. BLOSSER, Collection and Characterization of Airborne Particulate Matter in Buildings .....	I	572
RILEY, J.F., V.W. GOLDSCHMIDT, R.G. LEONARD, P.K. BAADE, G. WOLFBRANDT, Transfer Function of Gas Flames: Methods of Measurement and Representative Data .....	I	466
ROBERTZ, W., R. ROGERS, D. NALL, D. GREENBERG, Comparison of Computer- Predicted Thermal Loads with Measured Data from Three Occupied Townhouses .....	I	340
ROGERS, R., W. ROBERTZ, D. NALL, D. GREENBERG, Comparison of Computer- Predicted Thermal Loads with Measured Data from Three Occupied Townhouses .....	I	340
ROHLES, F.H., JR., The Empirical Approach to Thermal Comfort .....	I	725
ROSARIO, L.A., W.F. STOECKER, M.E. HEIDENREICH, T.R. PHELAN, Stability of an Air-Temperature Control Loop .....	I	35

**S**

SAMPATH, S., T.W. McDONALD, A.F.M. ALI, The Undirectional Coil Loop Thermosiphon Heat Exchanger ..... II 27

SASTRY, S.K., C. D. BAIRD, D.E. BUFFINGTON, Transpiration Rates of Certain Fruits and Vegetables ..... I 237

SCHADE, G.R., Saving Energy by Night Setback of a Residential Heat Pump System ..... I 786

SCHULTZ, W.W., V.W. GOLDSCHMIDT, Effect of Distribution Lines on Stand-By Loss of Service Water Heater ..... I 256

SCHWARTZ, M., J.W. SHELTON, T. BLACK, M. CHAFFEE, Wood Stove Testing Methods and Some Preliminary Experimental Results ..... I 388

SELCUK, M.K., A Graphical Approach to the Efficiency of Flat-Plate Collectors ..... II 395

SELLMAN, G., Insurance and Air-Conditioning Equipment ..... II 453

SHAH, M.M., Heat Transfer, Pressure Drop, Visual Observation, Test Data for Ammonia Evaporating Inside Pipes ..... II 38

SHAW, C.Y., G.T. TAMURA, Experimental Studies of Mechanical Venting for Smoke Control in Tall Office Buildings ..... I 54

SHELTON, J.W., T. BLACK, M. CHAFFEE, M. SCHWARTZ, Wood Stove Testing Methods and Some Preliminary Experimental Results ..... I 388

SMELTZER, L.R., Solar Controls and Control Modifications: New Century Town Solar Homes, Vernon Hills, IL ..... II 373

SMITH, K.E., E.F. SOWELL, P.W. OTHMER, The El Camino Real Solar Cooling Demonstration Project ..... II 435

SONDEREGGER, R.C., Diagnostic Tests Determining the Thermal Response of a House ..... I 691

SOWELL, E.F., The Use and Limitations of ASHRAE Solar Algorithms in Solar Energy Utilization Studies ..... II 77

SOWELL, E.F., K.E. SMITH, P.W. OTHMER, The El Camino Real Solar Cooling Demonstration Project ..... II 435

SPIELVOGEL, L.G., J.A. ORLANDO, P. HAYES, Feasibility of an Energy Index for Office Buildings ..... I 310

SPINNEY, S.C., TYE, R.P., Measurement of the Specific Heat of Building Materials ..... I 675

STOECKER, W.F., R.P. DABER, Conserving Energy in Dual-Duct Systems by Reducing the Throttling Ranges of Air-Temperature Controllers ..... I 23

STOECKER, W.F., L.A. ROSARIO, M.E. HEIDENREICH, T.R. PHELAN, Stability of an Air-Temperature Control Loop ..... I 35

STROEH, H.H., J.E. WOODS, Development of a Hospital Energy Management Index ..... II 68

SUMNER, L.E., JR., K.W. COOPER, A Parametric Study of an Open Air Cycle Air Conditioner Using Moist Air Thermodynamics ..... II 136

SWIM, W.B., Flow Losses in Rectangular Ducts Lined with Fiber Glass ..... II 216

**T**

TAM, S.W., F.W. AHRENS, C. KIM, An Analysis of the Pulse Combustion Burner ..... I 488

TAMURA, G.T., Experimental Studies on Exterior Wall Venting for Smoke Control in Tall Office Buildings ..... II 204

TAMURA, G.T., C.Y. SHAW, Experimental Studies of Mechanical Venting for Smoke Control in Tall Office Buildings ..... I 54

TREADO, S.J., D.M. BURCH, A Technique for Protecting Retrofitted Wood-Frame Walls from Condensation Damage ..... I 197

TYE, R.P., S.C. SPINNEY, Measurement of the Specific Heat of Building Materials ..... I 675

**V**

VER, I.L., A Review of the Attenuation of Sound in Straight Lined and Unlined Ductwork of Rectangular Cross Section ..... I 122

**W**

WARK, K., JR., A.L. ECKER, T.C. EDWARDS, A Tabular Data Boundary-State Analysis of the Edwards Cycle ..... II 173

WEAVER, R.D., E.B. MILLER, Computer-Aided Duct Design in a Small Engineering Office ..... I 647

WELLER, A.E., R.D. GIAMMAR, H.H. KRAUSE, Evaluation of Fuel Oil Additives for Increasing Efficiency and Reducing Emissions of Boilers ..... I 367

WEST, D.L., Assessment of Risk in the Research Laboratory: A Basis for Facility Design ..... I 547

WHITLOW, J.W., G.W. PENNEY, Measurement of Soiling of Surfaces in Rooms ..... I 600

WOLFBRANDT, G., V.W. GOLDSCHMIDT, R.G. LEONARD, P.K. BAADE, J.F. RILEY, Transfer Function of Gas Flames: Methods of Measurement and Representative Data ..... I 466

WOOD, B., S.A. MUMMA, J.I. YELLOTT, The Application of ASHRAE Standard 93-77 to the Thermal Performance Testing of Air Solar Collectors ..... II 410

WOODS, J.E., H.H. STROEH, Development of a Hospital Energy Management Index ..... II 68

WOODS, J.E., Thermal and Non-Thermal Human Responses to Air Movement and Relative Humidity ..... I 750

**Y**

YARON, I., M. JELINEK, I. BORDE, Enthalpy-Concentration Diagram of the System R22-Dimethyl Formamide and Performance Characteristics of Refrigeration Cycle Operating with this System ..... II 60

YELLOTT, J.I., B. WOOD, S.A. MUMMA, The Application of ASHRAE Standard 93-77 to the Thermal Performance Testing of Air Solar Collectors ..... II 410

YOUNKER, G.H., C.O. PEDERSEN, An Experimental Study of Equivalent Thermal Properties of a Wall Section with Air Cavities ..... I 703

